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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,070	05/22/2001	Nigel Sammes	2354/114	1011

2101 7590 08/09/2007

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EXAMINER	
MARTIN, ANGELA J	
ART UNIT	**PAPER NUMBER**
1745	

MAIL DATE	DELIVERY MODE
08/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/864,070	SAMMES ET AL.	
	Examiner	Art Unit	
	Angela J. Martin	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,16,18,27,29-37,39-54 and 87-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,16,18,27,29-35, 39-43, 48-54 and 87, 91* is/are rejected.

7)☒ Claim(s) *36,37,44-47 and 88-90* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to the Amendment filed on May 29, 2007. The Applicant has amended claims 32, 33. However, the rejection is made final for the following reasons of record.

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-13, 16, 29-32, 35, 87, and 91 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Song et al., U.S. Pat. No. 6,436,565 B1.

Rejection of claims 1-13, 16, 29-32, 35, 87 and 91 drawn to a fuel cell.

Song et al., teach a tubular solid oxide fuel cell (Fig. 2) comprising a tubular anode having pores (col. 2, lines 14-20), an electrolyte disposed on a surface of the tubular anode, and a cathode disposed on the electrolyte, wherein a thickness of the anode comprises over 50% of a total thickness of the anode, electrolyte, and cathode

(Fig. 2). It teaches the cathode comprises strontia-doped lanthanum manganite (col. 2, lines 18-20).

Thus, the claims are anticipated. However, in the alternative, Song et al., teach a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process. In re Marosi, 710 F. 2d 799, 218 USPQ 289 (Fed. Cir. 1983) and In re Thorpe, 777 F. 2d 695, 277 USPQ 964 (Fed. Cir. 1985).

3. Claims 32, 39, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al., U.S. Pat. No. 6,436,565 B1, in view of Ruka et al., U.S. Pat. No. 5,916,700.

Rejection of claims 32, 39, and 54 drawn to a fuel cell.

Song et al., teach a fuel cell as described above.

Ruka et al., teach a thickness of the supporting electrode (col. 3, lines 28-31) comprises over 50% of a total thickness of the supporting electrode, electrolyte (col. 3, lines 38-44) and outer electrode (col. 4, lines 4-10); wherein the thickness of the supporting electrode is 300 um (col. 3, lines 28-31). Additionally, it teaches the tubular anode has a non-circular cross-section (col. 3, lines 12-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Ruka et al., into the teachings of Song et al., because Ruka teaches a cathode-supported fuel cell and Kendall teaches an anode-supported fuel cell, the inner electrode in either case, must be the thicker of the two electrodes in order to provide structural support to the tubular fuel cell.

4. Claims 32, 40-43, 48-52, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al., U.S. Pat. No. 6,436,565 B1, in view of Ruka et al., U.S. Pat. No. 5,908,713.

Rejection of claims 32, 40-43, 48-52, 54 drawn to a fuel cell.

Song et al., teaches a fuel cell as described above.

Ruka et al., teach a fuel cell wherein the anode comprises a catalyst material of CeO2 in a proportion of 1.5 to 2 weight percent (col. 5, lines 40-45). It also teaches the anode comprises a volume percentage of nickel of 40 to 50% (col. 7, lines 14-17). Additionally, it teaches the anode comprises more than one anode layer, each layer having a different composition (col. 2, lines 45-65). It teaches the more than one anode layers comprise a thicker support layer and a thinner active layer, the support layer in contact with a fuel gas (col. 7, lines 2-9); wherein the support layer comprises a higher ratio of stabilized zirconia to nickel and wherein the active layer comprises a lower ratio (col. 7, lines 14-17); the support layer comprises about 40 to 50% nickel by volume (col. 7, lines 14-17). It also teaches the active layer comprises an embedded current-collecting wire (col. 3, lines 56-59); the support layer comprises aluminum oxide (col. 2, lines 61-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Ruka et al., into the teachings of Song et al., because Ruka et al., teaches the specifics of the anode present in an electrode- supported fuel cell and it also teaches a solid oxide fuel cell "providing the

desired combination of conductivity, adherence, electrochemical performance and stability over a long period of time" (Ruka et al., col. 2, lines 32-37).

5. Claims 29, 32, 53, 54, 88-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al., U.S. Pat. No. 6,436,565 B1, in view of Stover et al., Electrochem. Society Proceedings.

Song et al., teach a tubular solid oxide fuel cell as described above.

Stover et al., teach the cathode comprises at least cobaltate (p. 813, para. 1) or gadnolium (p. 816, para 2); cathode comprises more than one layer, each layer having a different composition (p. 813, Table 1); thickness of the anode (p. 813, Table 1); two cathode layers (p. 813, Table 1); more than two cathode layers (p. 813, Table 1); the composition of the two cathode layers (p. 812, Fig. 1; p. 813, Table 1). It teaches the support layer comprises aluminum oxide (p. 813, para.1).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Stover et al., into the teachings of Song et al, because Stover et al., teach a fuel cell having more than one cathode layer, which optimizes the cathode materials and increases the catalytic activity of the cathode (p. 815, last para.). The extruded tube having a non-circular cross-section would be a design choice of the artisan, depending on the shape of the holding device of the tube.

Allowable Subject Matter

6. Claims 36, 37, 44-47, and 88-90 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The Applicant claims a fuel cell as taught above.

However, the prior art of record does not teach the fuel cell with the limitations of claims 36, 37, 44-47, and 88-90.

Response to Arguments

7. Applicant's arguments filed May 29, 2007 have been fully considered but they are not persuasive.

Applicant acknowledges the telephonic interview on April 20, 2007, in which Examiner asked for evidence that the claimed fuel cell has different properties than Song's fuel cell. Applicant submits that the Song reference provides sufficient evidence that the claimed fuel cell has different properties than Song's fuel cell.

However, Applicant is just claiming a solid oxide fuel cell which is tubular, in which the anode has pores but those pores were formed by reduction of an oxide instead of using a pore-forming agent; as such, the claims were treated as a product-by-process. Therefore, to overcome the product-by-process analysis applicant needs to objectively show that either the anode/fuel cell structures are different or that his product

(anode/fuel cell) has unexpected results. The way that the Song references forms his pores (i.e. by using carbon powder in an extrusion process) is irrelevant unless applicant shows that his method makes a different product (i.e. structure or properties). (MPEP 2113). Applicant merely re-phrased the claim language and the claim language is still substantially the same, and the claim is still a product claim.

Amendment 09/06/06

claim 32: a tubular anode having pores formed by reduction of an oxide of an electrochemically active substance without inclusion of a distinct pore forming substance

Amendment 05/29/07

claim 32: a tubular anode having pores formed comprising a reduced form of an electrochemically active substance and excluding a distinct pore-forming substance, whereby the anode includes pores formed by reduction of an oxide of an electrochemically active substance without inclusion of a distinct pore forming substance

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER